

Amendment to the Drawings

The attached sheets of drawings includes amendments to Figs. 3-4, 7, and 11A, and replace the original sheets of drawings. The changes to the drawings are to correct form errors only and do not present new matter. Pursuant to 37 C.F.R. 1.121, it is requested that the submitted changes be approved by the Examiner.

Attachment: Replacement Sheets 2/8, 3/8, 6/8

REMARKS

Claims 1, 29, and 30 have been amended for clarification purposes only, and do not present new matter or warrant a new search. Claims 1-30 remain pending in the case. Further examination and reconsideration of the presently claimed application is respectfully requested.

Section 112, Second Paragraph, Rejections

Claims 1, 16, and 29-30 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A claim is said to be indefinite when it contains words or phrases whose meaning is unclear. However, if the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite. *Ex Parte Porter*, 25 USPQ2d 1144, 1145 (Bd. Pat. App. & Inter. 1992) MPEP 2173.05(e).

More specifically, statements in the Office Action reject claims 1, 16, and 29 for including the term “or.” The Office Action alleges that “the phrase ‘or’ renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by ‘or’), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d)” (Office Action, page 2). Further statements in the Office Action suggest that use of the phrase “or” does not clearly point out the subject matter which applicant regards as the invention (Office Action, page 2). The applicant respectfully disagrees with the Examiner and contends that use of the term “or” does not render the present claims indefinite.

The Examiner cites MPEP § 2173.05(d) as support for stating that the term “or” renders the present claims indefinite. However, this section of the MPEP deals with exemplary claim language (“for example” / “such as”) and does not apply to the alternative language (“or” / “optionally”) recited in claims 1, 16, and 29.

As set forth in MPEP § 2173.05(h), alternative expressions are permitted if they present no uncertainty or ambiguity with respect to the question of scope or clarity of the claims. One acceptable form of alternative expression, which is commonly referred to as a Markush group, recites members as being “selected from the group consisting of A, B and C.” See *Ex parte Markush*, 1925 C.D. 126 (Comm’r Pat. 1925). However, when materials recited in a claim are so related as to constitute a proper

Markush group, they may be recited in the conventional manner, or alternatively. For example, if “wherein R is a material selected from the group consisting of A, B, C and D” is a proper limitation, then “wherein R is A, B, C, or D” shall also be considered proper.

The same reasoning set forth in MPEP § 2173.05(h) could be applied to present claims 1 and 16. For example, if a shared contact structure (e.g., a bitline contact structure) “formed at a location selected from a group consisting of: i) completely within the memory cell on one side of the boundary, ii) completely within the second memory cell on an opposite side of the boundary, and iii) formed at the boundary, such that unequal portions of the shared contact structure are formed on either side of the boundary” is a proper limitation, then a limitation that recites “the shared contact structure is formed: i) ... ii) ... or iii)” should also be considered proper for at least the same reasons presented above and set forth in MPEP § 2173.05(h). As such, removal of this rejection as to claims 1 and 16 is respectfully requested.

Regarding claim 29, further statements in the Office Action suggest that the “disclosed ‘one or more subsystems’ is not clear to point out which applicant regarding [sic] as the invention as defined above.” (Office Action, page 3, emphasis original). However, as set forth in MPEP § 2173.05(h), alternative expressions using “or” are deemed acceptable, such as “wherein R is A, B, C, or D.” In addition to Markush-type claims, the following phrases were each held to be acceptable and not in violation of 35 U.S.C. 112, second paragraph in *In re Gaubert*, 524 F.2d 1222, 187 USPQ 664 (CCPA 1975): “made entirely or in part of,” “at least one piece,” and “iron, steel or any other magnetic material.” Applicants assert that the phrase “one or more subsystems” is an alternative expression for “at least one subsystem,” which has been deemed acceptable in at least one previous court case (*In re Gaubert*). For at least this reason, Applicants assert that the phrase “one or more subsystems” is not indefinite and respectfully request that this rejection as to claims 29 and 30 be removed.

Section 102 Rejections

Claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,222,758 to Higashide (hereinafter “Higashide”). In addition, claims 1-5 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,947,577 to Ishiguro (hereinafter “Ishiguro”). Furthermore, claims 16-19 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,778,462 to Castagnetti et al. (hereinafter “Castagnetti”). The standard for “anticipation” is one of fairly strict identity. A claim is anticipated only if each and every element as set forth in the claim is found, either

expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. Of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), MPEP 2131. More specifically, “all words in a claim must be considered when judging the patentability of that claim against the prior art.” *In re Wilson* 424 F.2d. 1382 (CCPA 1970). Higashide fails to disclose all limitations of the currently pending claims, some distinctive limitations of which are set forth in more detail below. In addition, Ishiguro is not available as prior art against the current application, and the §102(e) rejection of claims 16-19 over Castagnetti is improper.

The 102(e) rejection of claims 16-19 over Castagnetti is improper. The conditions for patentability set forth in § 102(e) state that a person shall be entitled to a patent unless the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent. The patent issued to Castagnetti and the present application share the exact same inventors: Ruggero Castagnetti, Ramnath Ventatraman, and Subramanian Ramesh. As such, the patent issued to Castagnetti was not filed by “another,” as required in the conditions set forth in 35 U.S.C § 102(e). Applicants assert that this rejection of claims 16-19 over Castagnetti is improper and respectfully request its removal.

Ishiguro is not available as prior art against the current application. To expedite prosecution, a declaration under 37 C.F.R. § 131 is filed with this response. The declaration establishes an invention date prior to November 12, 2003 for the subject matter of the current claims. Because Ishiguro was filed on November 12, 2003, it is not available as prior art under 35 U.S.C. § 102(e) against these claims. Accordingly, removal of this rejection of claims 1-5 is respectfully requested.

Higashide fails to disclose a shared contact structure (i.e., a contact structure shared between two vertically adjacent memory cells) formed proximate to a boundary between a first memory cell and a vertically adjacent memory cell, such that the shared contact structure is formed: i) completely within the first memory cell on one side of the boundary, ii) completely within the vertically adjacent memory cell on an opposite side of the boundary, or iii) formed at the boundary, such that unequal portions of the shared contact structure are formed on either side of the boundary. Independent claim 1 recites:

A memory array comprising a plurality of memory cells arranged in one or more rows and columns, wherein each memory cell shares at least one contact structure with a vertically adjacent memory cell, wherein the shared contact structure is formed proximate

to a boundary between the memory cell and the vertically adjacent memory cell, such that the shared contact structure is formed: i) completely within the memory cell on one side of the boundary, ii) completely within the vertically adjacent memory cell on an opposite side of the boundary, or iii) formed at the boundary, such that unequal portions of the shared contact structure are formed on either side of the boundary.

Support for the above limitation may be found in the Specification (e.g., on page 7, lines 3-28), and in the Drawings in FIG. 11A.

In particular, FIG. 11A shows that a shared contact structure (i.e., a contact structure shared between two vertically adjacent memory cells) may reside: i) completely within a memory cell on one side of the boundary (e.g., BLB_B of transistor T6), ii) completely within a vertically adjacent memory cell on an opposite side of the boundary (e.g., BL_B of transistor T5), or iii) formed at the boundary, such that unequal portions of the shared contact structure are formed on either side of the boundary (e.g., BL_A of transistor T3 and BLB_A of transistor T4). By sharing contact structures unequally between vertically adjacent memory cells, the present invention is able to reduce memory cell density by reducing the length of the memory array (in some cases, by about 10-20%).

Unlike the presently claimed case, Higashide fails to provide teaching or suggestion for a shared contact structure formed: i) completely within a memory cell on one side of the boundary, ii) completely within a vertically adjacent memory cell on an opposite side of the boundary, OR iii) formed at the boundary, such that unequal portions of the shared contact structure are formed on either side of the boundary, as recited in present claim 1. In fact, Higashide appears to mention a shared contact structure only once throughout the entire patent. For example, in column 12, line 66 to column 13, line 8, Higashide mentions that vertically adjacent memory cells may share a bit line contact. However, Higashide clearly states that the bit line contact is shared equally at the boundary between the two memory cells. *See*, Higashide, column 13, lines 2-8.

There is absolutely no teaching within Higashide for a bit line contact (or any other contact, for that matter), which is shared unequally between two memory cells, as recited in present claim 1. In other words, Higashide fails to disclose that a shared contact may be formed completely within a memory cell on one side of the boundary between two vertically adjacent memory cells. Higashide also fails to disclose that a shared contact may be formed completely within a vertically adjacent memory cell on an opposite side of the boundary. Finally, Higashide fails to disclose that a shared contact may be formed at the boundary, such that unequal portions of the shared contact structure are formed on either side of the

boundary. As such, Higashide fails to anticipate all limitations of present claim 1. Accordingly, removal of this rejection of claim 1 is respectfully requested.

Allowance of Claims

Claims 6-15 and 20-28 were objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 6-15 depend from independent claim 1, and claims 20-28 depend from independent claim 16. As noted above, the art cited against claims 1 and 16 either fails to anticipate one or more limitations of the claims, or is not available for rejection against the current claims.

Further statements the Office Action suggest that claims 29-30 would also be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph. As discussed above, Applicants believe the § 112, second paragraph, rejection of claims 29-30 is improper and cannot be maintained.

Applicant sincerely appreciates the Examiner's recognition of the patentable subject matter recited in claims 6-15 and 20-30 and awaits allowance of the remaining claims in the case. The Office Action states some reasons for allowance of claims 6-15 and 20-30 in the section of the Office Action entitled "Allowable Subject Matter." Applicant asserts that it is the combinations of features in these claims that render the claim distinguishable over the cited art, not just the portions of the claims cited in the Office Action.

CONCLUSION

This response constitutes a complete response to all issues raised in the Office Action mailed April 25, 2005. In view of the remarks herein traversing the rejections, Applicants assert that pending claims 1-30 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned attorney earnestly requests a telephone conference.

No fees are required for filing this amendment; however, the Commissioner is authorized to charge any additional fees, which may be required, or credit any overpayment, to deposit account number 12-2252/03-1509.

Respectfully submitted,



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